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A new species of *Schinia* Hübner from riparian habitats in the Grand Canyon (Lepidoptera: Noctuidae: Heliothinae)

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Abstract

***Schinia immaculata*, new species,** is described from riparian habitats along the Colorado River in the Grand Canyon. Habitats include the shoreline, new high water dominated by tamarisk (*Tamarix* sp., Tamaricaceae), and old high water characterized by mesquite (*Prosopis* sp., Fabaceae), acacia (*Acacia* sp., Fabaceae), and desert shrubs. Adult and male genitalia are illustrated and compared with *Schinia biundulata* Smith.

Key words: systematics, genitalia, tamarisk, mesquite, acacia

Introduction

Dr. Neil Cobb and Robert Delph of Northern Arizona University are currently involved in an arthropod inventory and monitoring project in the Grand Canyon National Park. This project will inventory and characterize the riparian arthropod fauna associated with the different river flow stage riparian environments along the Colorado River in the Grand Canyon. During examination of this material a new species of *Schinia* Hübner, 1818, was discovered. *Schinia* is the most diverse genus in the subfamily Heliothinae with 118 species (Hardwick 1996, Knudson et al. 2003, Pogue and Harp 2003a, Pogue and Harp 2003b, Pogue and Harp 2003c, Pogue and Harp 2004). This new species is unusual because of its lack of forewing pattern and solid color hindwing.

The objectives of this paper are to describe a new species of *Schinia*, which will enhance the interpretation of the data collected for the arthropod inventory and monitoring project along the Colorado River in the Grand Canyon.

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***Schinia immaculata* Pogue, new species**
(Figs. 1, 3–4)

Diagnosis. *Schinia immaculata* resembles *S. biundulata* Smith in size, forewing ground color, and dark hindwing, but *S. biundulata* has well defined antemedial and postmedial lines, which are absent in *S. immaculata*. In male genitalia the shape of the valve is different, with *S. immaculata* having a round apex (Fig. 3) versus a more pointed apex (Fig. 5) in *S. biundulata*; and the uncus is relatively longer, approximately 0.38 X length of the valve in *S. immaculata*, compared to 0.32 X length of valve in *S. biundulata.*

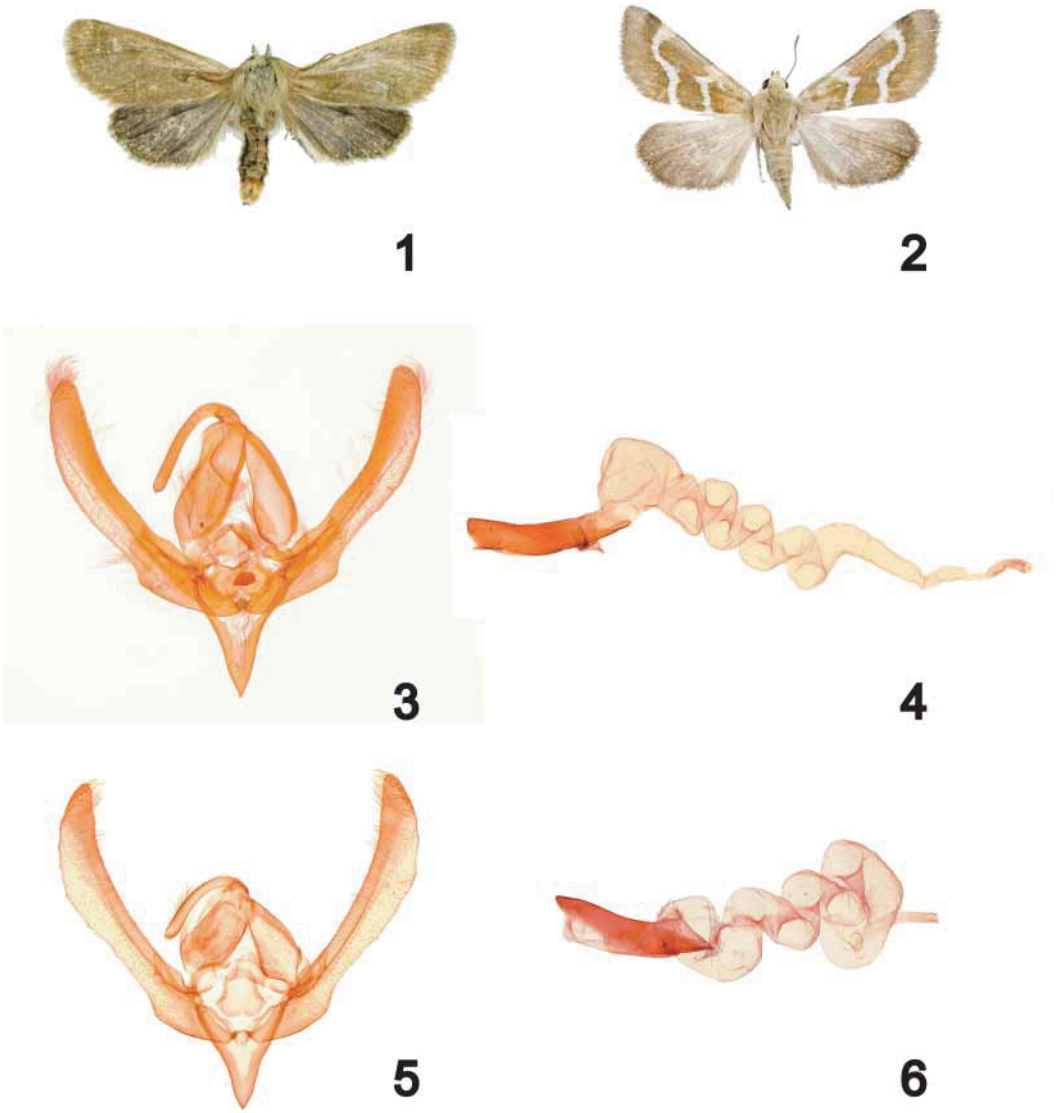
Description. *Head:* Frons and vertex cream; labial palpus long, extending beyond frons, cream; eyes large and globular. *Thorax:* Scales hair-like overlaying wide scales, cream; fore femur cream with long, white, ventral fringe of hair-like scales; tibia white, largest spine on inner side elongate, round, 1 shorter slender spine dorsal to it, outer side with 2–3 slender spines that become progressively shorter proximally; tarsi white; middle and hind legs white; underside white. *Forewing:* Length 10.53–11.70, mean 11.21 $\pm$ 1.21 mm (n=4). Ground color cream with a faint tinge of rufous on the scales; pattern absent; fringe white. *Hindwing:* Ground color gray; pattern absent; base of fringe cream, rest white. *Abdomen:* Dorsum white, distal border of sternites cream, ventrum white; scent pockets and hair pencils on second sternite absent. *Genitalia* (Figs. 3–4): Uncus elongate, approximately 0.38 X length of valve, apex blunt with small hook; valve moderate (length approximately 7.1 X width), costal margin slightly bent at 2/3 length, posterior margin gently curved, apex round; ampulla small (0.04 X length of valve); corona with stout spines; sacculus with ventral margin produced; juxta rectangular, width greater than height, dorsal margin broadly V-shaped; saccus V-shaped; aedoeagus slightly curved; vesica emerging ventrally, basal diverticulum present, 3 1/2 coils; cornuti finely scobinate.

Female: Unknown.

Type material. HOLOTYPE: ♂, Arizona, Coconino Co., Colorado River, Grand Canyon, river mile 23.0 L, shore, 36.6003° N, 111.7668° W, May 2, 2003, R. J. Delph, genitalia slide USNM 47867, USNM ENT 00219964. The holotype is provisionally deposited at the USNM, Washington, DC, pending mutual resolution and agreement with the National Park Service regarding specimen deposition.

Distribution and Habitat. Specimens were taken from 3 riparian zones of the Colorado River in the Grand Canyon in Coconino Co., Arizona: shoreline, old high water, and new high water. The shoreline zone is situated one meter above the existing daily high-water shoreline, which varies over time depending on water releases from Glen Canyon Dam. The new high water zone is situated just above shoreline and was characterized by vegetation dominated by tamarisk (*Tamarix* sp., Tamaricaceae). The old high water zone was the highest elevation hydrologic zone and was characterized by mesquite (*Prosopis* sp., Fabaceae), acacia (*Acacia* sp., Fabaceae), and desert shrubs. A total of 34 sites were selected within these zones to monitor arthropods. This information was summarized from the Grand Canyon Arthropod Inventory & Monitoring website: http://bugs.bio.nau.edu/grand_canyon/index.htm.

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FIGURES 1–6. Adults and male genitalia. 1, *Schinia immaculata,* male*,* Arizona, Coconino Co. Colorado River, Grand Canyon, river mile 166.5 L, USNMENT 00229965; 2, *S biundulata,* female*,* Nevada, Humboldt Co. Sulphur, USNMENT 00220807; 3, *S. immaculata*, male genitalia; 4, *S. immaculata*, aedoeagus; 5, *S. biundulata*, male genitalia; 6, *S. biundulata*, aedoeagus.

Material Examined. PARATYPES (3°): **U.S.A.: ARIZONA:** COCONINO CO. 1° same data as holotype except: USNM ENT 00210120 (NAU); river mile 166.5 L, old high water, 36.2542 N, 112.8996 W, 14 Apr. 2003 (1°), R. J. Delph, USNM ENT 00219965 (USNM); river mile 202 R, new high water, 36.0526 N, 113.3489 W, 15 May 2001 (1°), J. Rundall, USNM ENT 00210119 (NAU). Paratypes deposited in the National Museum of Natural History, Washington, DC (USNM) and Northern Arizona University, Flagstaff, AZ (NAU).

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Etymology: The specific epithet, *immaculata*, refers to the lack of any pattern on the forewing and hindwing.

Discussion. Unlike most species of *Schinia*, *S. immaculata* has no forewing markings in all but one paratype, which has a barely perceptible trace of both an antemedial and postmedial line (Fig. 1). The form of the foretibia, male genitalia, and the coils of the aedoeagus are typical of *Schinia*. The species was collected in all riparian zones of the study area. *Schinia immaculata* is a spring flyer, being active from mid-April to mid-May. Other large river systems in the southwestern United States should be investigated to try to learn more about the distribution of this unusual species.

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